CLAIMS

1. A method for producing a chlorinated hydrocarbon compound represented by general formula (2):

$$C_nR^1{}_mH_k(CR^2R^3Cl)_j \quad - \quad (2)$$

(where n is an integer of 1 to 12; m and k each represent an integer of 0 to 25; j is an integer of 1 to 10; R^1 represents an atom selected from the group consisting of chlorine, bromine, iodine, oxygen, nitrogen, sulfur, and phosphorus, and R^1 may be the same or different when m is 2 or more; a j-valent group represented by $C_nR^1{}_mH_k$ has no tertiary carbon-hydrogen bond; and R^2 and R^3 each represent a saturated aliphatic hydrocarbon group containing 1 to 5 carbon atoms or a saturated aliphatic hydrocarbon group containing 1 to 5 carbon atoms having hydrogen atoms partially substituted with halogen atoms, and R^2 and R^3 have no tertiary carbon-hydrogen bond), the method comprising: allowing a compound represented by general formula (1):

$$C_nR^1{}_mH_k(CR^2R^3OH)_j \quad - \quad (1)$$

(where m, n, k, j, R^1, R^2, and R^3 are the same as above) to react in the presence of aqueous hydrochloric acid; separating an organic layer by oil-water separation; and bringing the separated organic layer into contact with a hydrogen chloride gas.

2. The method for producing a chlorinated hydrocarbon compound according to Claim 1, further comprising: allowing a compound represented by general formula (3):

$C_nR^1_mH_k(CHR^2R^3)_j$ - (3)

(where m, n, k, j, R^1, R^2, and R^3 are the same as above) to react with an aqueous solution of a metal hypochlorite and a protonic acid; and mixing the reaction mixture with an aqueous alkaline solution to yield the compound represented by general formula (1).

3. A method for producing a chlorinated hydrocarbon compound represented by general formula (2), comprising: subjecting a mixture containing a chlorinated hydrocarbon compound represented by general formula (2) to solid-liquid separation, the mixture being produced by reaction between an aqueous solution of a metal hypochlorite, a protonic acid, and a compound represented by general formula (3):

$C_nR^1_mH_k(CHR^2R^3)_j$ - (3)

(where m, n, k, j, R^1, R^2, and R^3 are the same as above); mixing the resulting solid material with an aqueous alkaline solution to form a compound represented by general formula (1); and allowing the resulting compound to react in the presence of aqueous hydrochloric acid.

4. The method for producing a chlorinated hydrocarbon compound according to any one of Claims 1 to 3, wherein the compound represented by general formula (2) is produced from the compound represented by general formula (1) in the presence of an organic solvent and aqueous hydrochloric acid.

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5. The method according to any one of Claims 1 to 4, wherein the compound represented by general formula (1) is an aromatic hydrocarbon containing a 2-hydroxy-2-propyl substituent.

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6. The method according to any one of Claims 2 to 5, wherein the metal hypochlorite is selected from the group consisting of potassium hypochlorite, sodium hypochlorite, calcium hypochlorite, barium hypochlorite, copper hypochlorite, and copper(II) hypochlorite.

7. The method according to any one of Claims 2 to 6, wherein the protonic acid is selected from the group consisting of hydrochloric acid, sulfuric acid, and acetic acid.

8. The method according to any one of Claims 2 to 7, wherein the aqueous alkaline solution is an aqueous solution of sodium hydroxide or potassium hydroxide.

9. The method according to any one of Claims 2 to 8, wherein a halogenated organic solvent is used for producing the compound

represented by general formula (2) from the compound represented by general formula (3).

10. The method according to Claim 9, wherein the halogenated organic solvent used for producing the compound represented by general formula (2) from the compound represented by general formula (3) is a halogenated organic solvent selected from the group consisting of monochlorobenzene, dichlorobenzene, trichlorobenzene, ethyl chloride, ethylene dichloride, carbon tetrachloride, chloroform, methylene chloride, 1-trichloro-2-trifluoroethane, and trifluoromethylbenzene.

11. The method according to any one of Claims 2 to 10, wherein an aromatic hydrocarbon or aliphatic hydrocarbon organic solvent is used in the step of mixing the aqueous alkaline solution to produce the compound represented by general formula (1) and then performing separation by filtration, and also used for washing the resulting solid.

12. The method according to Claim 11, wherein the aromatic hydrocarbon or aliphatic hydrocarbon organic solvent used in the step of mixing the aqueous alkaline solution to produce the compound represented by general formula (1) and then performing separation by filtration is a solvent selected from the group consisting of pentane, cyclopentane, hexane, cyclohexane, heptane, benzene, toluene, and xylene.

13. The method for producing a chlorinated hydrocarbon compound according to any one of Claims 4 to 12, wherein the organic solvent for producing the chlorinated hydrocarbon compound represented by general formula (2) from the compound represented by general formula (1)is a saturated hydrocarbon solvent, an aromatic hydrocarbon solvent, or a halogenated organic solvent.

14. The method for producing a chlorinated hydrocarbon compound according to Claim 13, wherein the organic solvent for producing the chlorinated hydrocarbon compound represented by general formula (2) from the compound represented by general formula (1) is at least one solvent selected from the group consisting of pentane, cyclopentane, neopentane, hexane, cyclohexane, heptane, methylcyclohexane, octane, norbornene, ethylcyclohexane, benzene, toluene, xylene, ethylbenzene, butyl chloride, and ethyl chloride.